

points, so far as it goes, in this latter direction. I cannot induce the female of the Reazzino *Melitæa* to lay on any of the usual food-plants of this group, though others of the group lay freely in captivity, which may point to some specialization in the matter of food-plant, or may have no significance whatever. These latter remarks apply only to the Reazzino insect, for Assmann has given a brief description of the larva of *britomartis* from Klarenkrantz, which, if trustworthy, is sufficiently distinctive, though in some points it approaches more closely to *dictynna*, and in others to *parthenie* or *aurelia*.

I must not, however, be taken to suppose that the anatomical evidence is in these cases of no importance, merely because I believe that a wrong deduction has been drawn from the facts; on the contrary, I believe that they give a valuable indication of the phylogeny of the species in question, and in the absence, so far, of any evidence compelling us to believe the contrary, we may at present assume that the connection between *britomartis* and *dictynna* on the one hand, and *dictynnoides* and *aurelia* on the other, is much closer than the double-brooded habit of the first-named species and the general appearance of each pair of species would lead us to suppose. The scarcity of *dictynna* at Reazzino and of *aurelia* on the Cecina and Tatra gives some slight support to the same theory, since it is well recognized that the struggle for existence is most severe between the most closely related species.

(To be continued.)

SOME BEES OF THE GENUS *CROCISA* FROM ASIA AND AUSTRALIA.

By T. D. A. COCKERELL.

THE beautiful parasitic bees of the genus *Crocisa* abound in the tropics of the Old World, and extend in diminished numbers into the warm temperate regions north and south. Their study has been considered difficult, owing to the supposed wide range and great variability of many of the species. Having paid some attention to the genus for a number of years, I am convinced that the species are more numerous and restricted in range than has been generally supposed. The identification of the described forms is not altogether easy, owing to the brevity of most of the descriptions; in some cases, when I have not seen material from the type locality or its vicinity, I may have erred in my determinations, being obliged to suppose identity when there is substantial agreement with the descriptions, and nothing is known to the contrary.

teriorly; anterior tibia and basitarsus each with a large white patch on outer side, and long black hairs; middle femur with a pair of almost or quite contiguous white spots behind beyond the middle; hind femur with a large triangular white patch above at apex; middle tibia with a very large white patch on outer side; hind tibia with a smaller, subtriangular; median patch; hind basitarsus white on outer side except the basal fourth; anterior and middle basitarsi with a little white hair on outer side; abdomen with more or less round, widely separated, white spots, one at middle of base of first segment, four subapical on segments one to three, and two each on segments four and five; second and third ventral segments with a white spot on each side. In my table i. Bull. Amer. Mus. Nat. Hist. xxiii. p. 232, this runs out because of the different ornamentation of the tibiæ. Compared with *C. macleayi*, Ckll., it differs by the white spots not being stained with ferruginous, the ornamentation of pleura, the anterior wings dark practically to base, &c. The ornamentation of the face is rather peculiar, consisting of a large thick U in white (leaving the lower half of the clypeus dark), and small geminate white spots below the antennæ.

Hab. Mackay, Queensland (Turner, 450).

Crocisa ridleyi, sp. nov.

♀. Length about $12\frac{1}{2}$ mm.; black with bluish-white markings, on face quite white, but on abdomen, legs, &c., a very delicate pale bluish; scutellum W-like, but the median angle much greater than a right angle; anterior wings dark fuscous, with the usual spots, the basal region largely hyaline, but the fuscous extending strongly along the basal nervure and the region of the transverso-medial, but a sharply defined hyaline line along the upper side of the anal nervure, the anal cell also mainly hyaline; posterior wings hyaline, slightly brownish; pygidial plate with a very sharp median carina; clypeus densely punctured; face covered with white hair, scanty on upper part, and wanting on lower third of clypeus; mesothorax with a light margin, broken (abraded?) behind; median mesothoracic stripe broad, narrowing posteriorly, ending about middle of disc, with a spot on each side; scutellum sparsely punctured, black, much white hair coming from beneath the notch; pleura light-haired, with a large central very strongly punctured bare patch; anterior and middle femora with light hair behind; tibiæ light-haired on outer side, anterior ones with a shining apical bare spot, hind ones with about the apical third black-haired; tarsi light-haired on outer side, even on the small joints; abdomen obscurely metallic, especially on first segment; first segment with broad basal and subapical bands, interrupted medially, the two joined by a vertical band on lateral margins; the other segments with broadly interrupted bands, that on the second having a lateral process extending to base of segment; ventral segments two to four with much light hair at sides.

Resembles *C. decora*, but known by the paler markings, the posterior band of first segment only rather narrowly interrupted, the light margin of mesothorax continuous laterally, &c.

The pattern of the abdomen is nearly as in the African *C. braunsiana*, Friese.

Hab. Penang (H. N. Ridley).

Crocisa irisana, sp. nov.

♀. Length about 10 mm., expanse about 21; black, the colour of the markings as in *C. ridleyi*; scutellum W-like, but the median angle very broad; wings brownish, only moderately dark, the colour nearly uniform on anterior pair; pygidial plate small; clypeus very minutely punctured; a strong keel between antennæ; face covered with light hair, but most of clypeus bare; mesothorax with six large spots, the anterior ones largest, transverse, about half on prothorax; median line reduced to a small inconspicuous isolated longitudinally elongated spot; a small patch above each tegula, the tegulæ minutely punctured, and with a white patch behind; scutellum dark, with some bluish-white hair above the notch, and long white hair (not at all bluish) projecting from beneath; pleura white-haired (very densely above), with a very broad transverse strongly punctured black band; anterior and middle femora with some white hair at apex behind; tibiæ and tarsi marked practically as in *C. ridleyi*; abdomen marked essentially as in *C. ridleyi*, except that the first segment is all light-haired at sides, except along hind margin, the light area notched on each side within.

Hab. Irian, Benquet Province, Philippine Islands, May 1st. Collector unknown to me. *C. emarginata*, *C. lamprosoma*, and *C. nitidula* have been listed from the Philippine Islands, but their presence there needs confirmation.

The following species have been previously described:—

C. quartine, Gribodo, var. a. Markings of abdomen violet. Koepang, Timor. No. 483.

C. verticalis, Ckll. Amboyna.

C. basalis, Friese. Sema Island (off Timor). No. 430.

C. rostrata, Friese. Singapore (H. N. Ridley).

C. japonica, Friese. Japan.

C. decora, Smith. Singapore (H. N. Ridley); Tjigombong, Java (C. W. Andrews); Sadia (= I suppose Sadiya in Assam). This is *C. emarginata* of authors, but not the true *emarginata* of Lepeletier. Bingham ('Fasciculi Malayenses,' Zool., iii. p. 56) refers what I suppose to be the same insect to *C. decora*, and I follow him, not without recognizing a possibility that the true (Chinese) *decora* is different. The abdominal markings are of a fine turquoise blue, of the same colour as those of *C. basalis*.

C. luzonensis, Ckll. Irian, Philippine Islands, May 30th. Evidently obtained by the same collector as that of *C. irisana*. The blue of first abdominal segment is deeply squarely incised basally, and there are four broad entire bands.

C. amboinensis, Rads. Amboyna.

C. massurii, Rads. Dalhousie, N.W. India, July 7th, 1906

(H. J. W. Barrow); Kangra Valley, 4500 ft., October, 1899 (Dudgeon). The Kangra Valley specimen has the abdominal bands much more widely interrupted than the other, but it is of the opposite (female) sex.

NEW LEPIDOPTERA-HETEROCERA FROM FORMOSA.

BY A. E. WILEMAN, F.E.S.

(Continued from p. 193.)

Syntomoides catena, sp. n.

♀. Head and body blackish, a yellow patch on prothorax, and traces of a yellow belt on middle segment of the abdomen. Fore wings blackish, hyaline spots somewhat as in *S. finitima*, but smaller, and the outer series more uniform and chain-like. Hind wings have three hyaline spots, one below the cell, and two, separated by a vein, beyond end of cell.

Expanse, 22 millim.

Collection number, 20.

Two specimens from Garambi, October, 1904.

Possibly this may be the female sex of *S. finitima*.

Syntomoides finitima, sp. n.

♂. Head and thorax blackish, the latter marked with yellow; abdomen blackish, dorsally marked with yellow, and laterally with yellowish orange. Fore wings blackish with seven hyaline spots, separated by the veins and placed as follows: one in the cell, a smaller one below, a larger one in the interno-median interspace; a series of four beyond end of cell, the second minute. Hind wings have the central area hyaline, broken up by the blackish veins; margins broadly blackish.

Expanse, 22 millim.

Collection number, 20 a.

Two male specimens from Kanshirei (1000 ft.); one taken April 16th, 1906, the other (the type), July 21st, 1908. The 1906 example expands 25 millim., and the hyaline spots are larger than those of the type.

Syntomis interrupta, sp. n.

Head black, face yellow, antennæ black tipped with white above; thorax black, collar, patagia, and posterior edge yellow; abdomen black with seven yellow belts, the first incomplete, and the last three confluent above. Fore wings black; five hyaline spots—one near the base yellow tinged, a triangular one in the cell, one divided by vein two below the cell, two beyond the cell each traversed by a vein (the basal spot is separated from the spot below cell by a square patch of the ground colour, and both these spots are only divided from that in